



Technische
Universität
Braunschweig

Recycling

Environmental Education in Turkey

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Braunschweig, 18.04.2015

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1. Introduction

During our studies at the TU Braunschweig we took part in an environmental education project called “Umweltbildung in der Türkei”.

For this project we developed a school lesson for children at the age of eight to twelve.

We decided to teach the children the importance of waste reduction and separation using the example of paper recycling. After participating in this project the children have a new way of understanding the waste issue.

Topic	Material	Time [min]
Introduction	/	2
Newtown Story	Newtown story for all to take home (distributed afterwards)	10
Theory of waste hierarchy	Questions on cards	15
Hand Papermaking	<ul style="list-style-type: none">➤ Newspaper➤ Filter frame➤ Fleece odds➤ Bowl➤ Mixer➤ Deco material (glitter, confetti, etc.)	65
End of the lesson	/	8

Table 1: Timetable

2. Lesson

2.1. The story of Newtown

The story of Newtown was chosen because it fits perfectly with the topic of recycling waste and is an easy and nice starter for a lesson.

To get into the topic of responsible waste handling, the lesson starts by reading the following story of Newtown. Based on the story the students are supposed to recognize the problems concerning the huge amount of waste in the story and therefore in their real life's. They should find out that on one hand there are not enough resources to keep up the described live-style. On the other hand that the waste has to be handled.

Newtown

In Newtown everything is new every day. Every morning the people of Newtown wake up in their new beds, which they bought the day before. Every morning they have a new toothbrush and new soap. The new radio plays the newest music and the newest news. They take their nice wrapped butter and milk out of the new fridge. Even the tea is coming in new bags and the dishes are new.

With the new bus the children, wearing nice new clothes and new cool school bags, are brought to school. On the sidewalks you can see big waste bins and overstuffed plastic bags containing everything that was used yesterday. Among the waste there is the radio and the only once used old bed.

The people of Newton are happy that the garbage men are picking up all the old stuff from the day before. And the kids are looking forward to their new toys they will get this afternoon. They will have new trampolines to jump on, new DVDs to watch and new paper to draw on.

Next to the city there is a big mountain. This mountain is growing everyday. It is the waste pile.

You can hardly see the garbage trucks on the top of the mountain, because the mountain is so huge.

In the newest newspaper you can read an article by professor Newton/Yenierkek. He is bringing the attention to possible problems with the giant waste pile, a waste slide could appear. An old can, the football from yesterday or a little play car could roll down the mountain and take more and more waste with it. Professor Yenierkek fears that all the waste could bury Newtown. Also he sees a problem that one day there will be no more resources to make new stuff. He fears that there would be no more trees left to make paper. But the people of Newtown do not care for the warning. They enjoy having new things.

After the story is read, we are going to ask the children about their habits at home, e.g. how often they get new toys, etc. So the children can understand the next topic.

2.2. Waste hierarchy

The next topic refers to waste hierarchy. The children should develop own thoughts and ideas how to handle the pile of rubbish of the story of Newtown. Than transfer the solutions to their lives. Also they should decide which ways of handling waste are the best for the environment and create their own hierarchy. During process of finding the solutions, the teacher should support the children by asking questions. The teacher begins with the disposal and asks questions like

- In comparison with the Newtown Story: “Where do you store the garbage at home?” and “How do you separate your garbage at home?”
- The topic of recycling can be acquired by questions like “What materials can you reuse?” and “What do you understand by the word ‘Recycling’?”
- The last point contains questions like “Do you need every day new stuff?”, “Which materials or objects can you use several times?” and “How can you minimize the garbage at home?”

A board drawing similar to the shown waste hierarchy should be created.

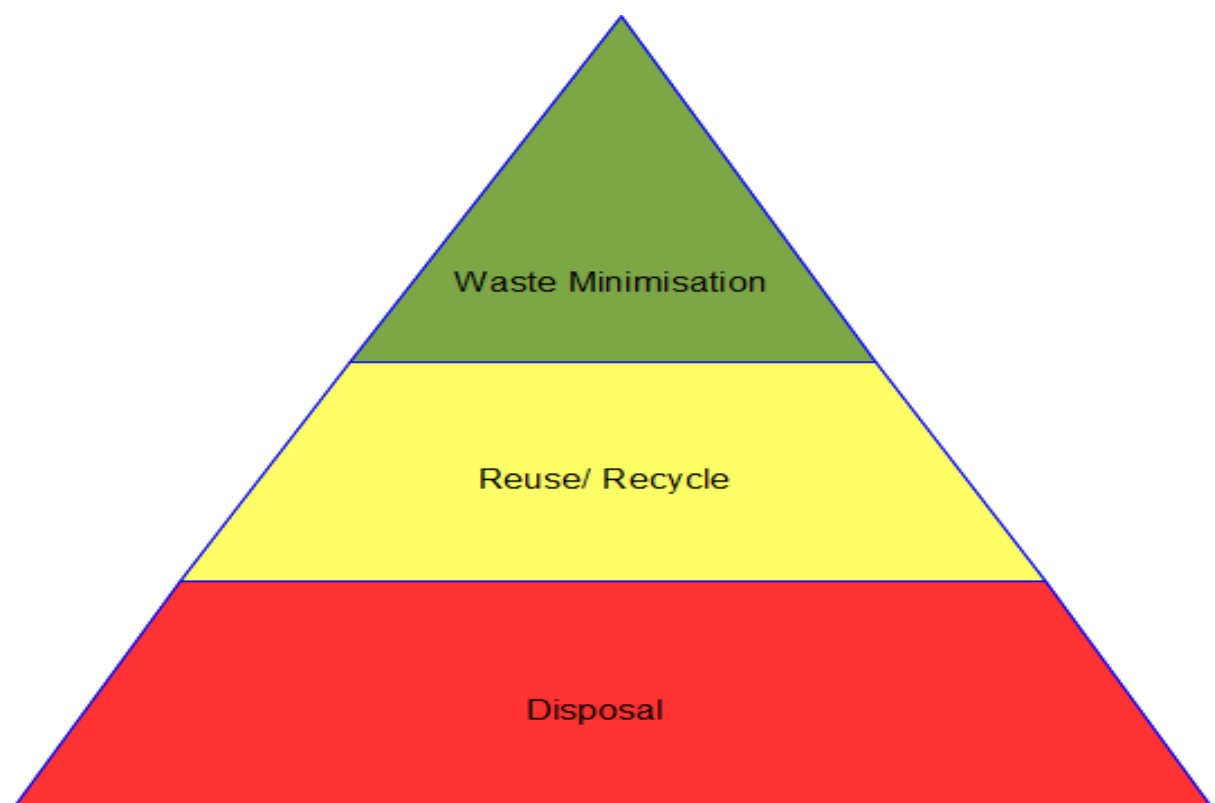


Table 2: Waste hierarchy

2.3. Hand papermaking

The main topic of our program is making recycled paper by hand. The reason why we choose to make recycled paper by hand is that this topic is very easy to convey. Every schoolchild works daily with paper and can thus already make a rough picture of how much everyone is consuming. We want to show the children that recycled paper can be just as easily used to describe how it is produced economically. By confronting the children playfully with the topic of paper recycling we want them to be interested and to raise their awareness for responsible use of valuable resource – in this case: paper. Our desire is that the children are more careful in the way they handle paper in their everyday life and will consider to recycle more of the paper they are using.

Material and methods

For papermaking we need waste paper, preferably old newspapers, a bucket, felted fabrics, a mixer and two press plates including clamps.

Preparation

Before class we prepare the pulp. We shred the waste paper and mix it with the lukewarm water.

Implementation

The children are divided into groups of four. In addition to their utensils each group gets a short illustrated guide. They pour the prepared pulp into a tub filled with warm water. The children can add dye food color, red beets, Easter eggs color, colorful ink or colored paper.

The auxiliary frame is added to the frame and immersed vertically into the pan. Underwater, the frame is rotated horizontally and shaken, so that the pulp is distributed evenly over the sieve. Then the sieve is lifted from the water and held at an angle so that the water can drain.

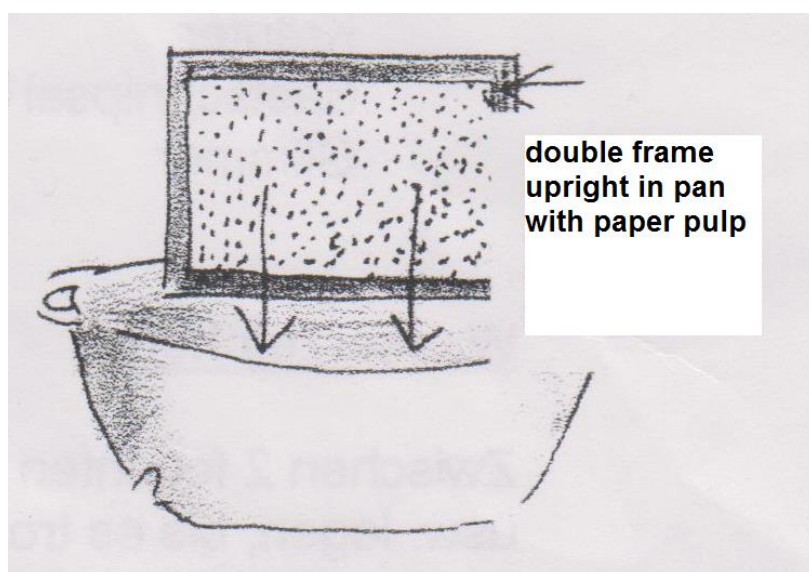


Figure 1: Scooping

A damp felt cloth is laid flat on a pressure plate. The frame is kept perpendicular to the felt and set with sweeping on the felt cloth. If the paper does not peel off on their own the sieve, must be carefully knocked on the affected place of the screen.

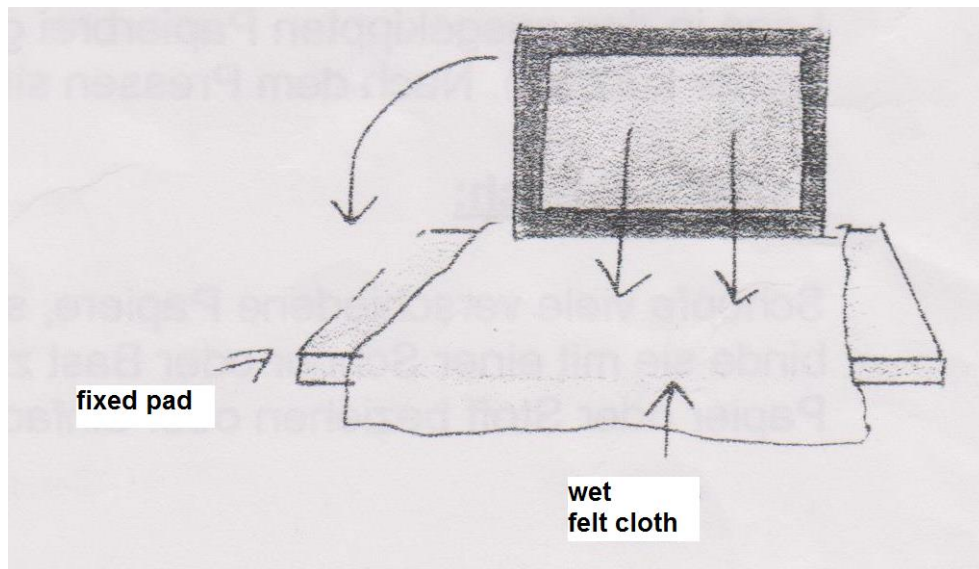


Figure 2: *Overturning*

The frame is lifted and the next wet felt cloth is placed over it. The child is doing this until there is enough paper. Finally, the second pressure plate is put over the felt and it has to be pressed firmly together and fixated with two screw clamps.

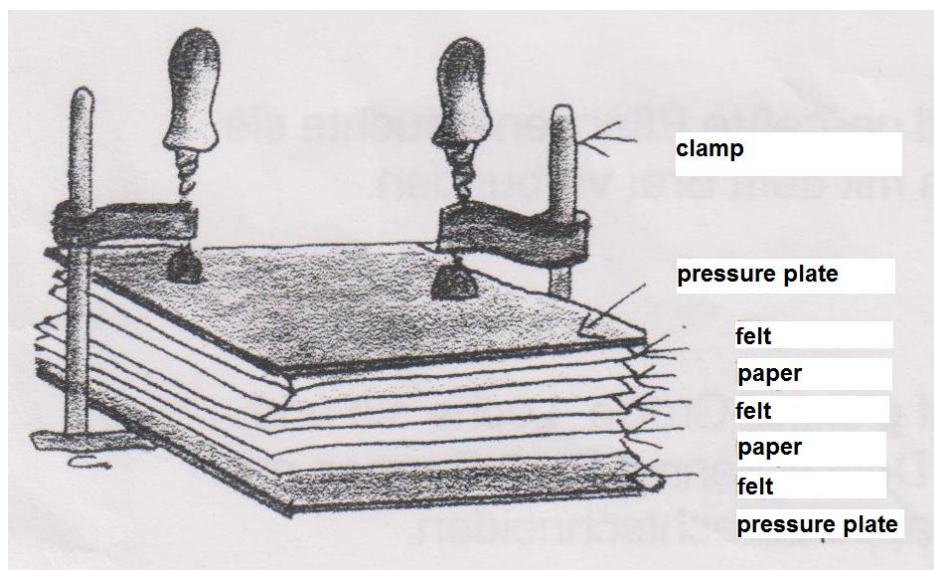


Figure 3: *Couching*

If no more water runs out, the screw clamps are released and the felted fabrics are individually placed on damp towels or newspaper to let them dry.

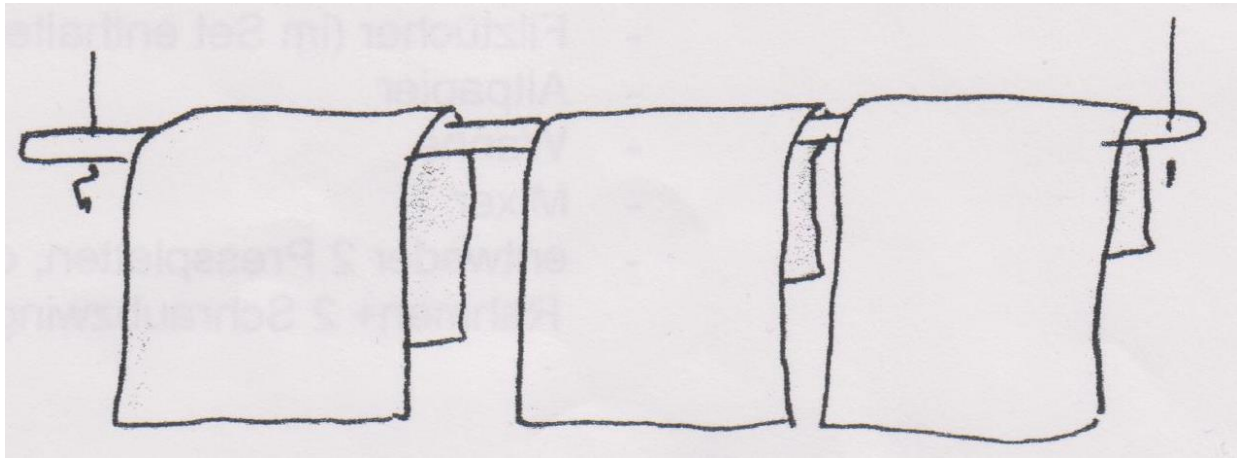


Figure 4: Drying

To embellish the self-made paper, various things can be added, e.g. herbs, flower petals, confetti etc. Also cress seeds are as adding very interesting, because the cress is going to grow.

3. Outlook

At the end of the lesson we want to show the children products made of recycled paper, so the children see that it does not differ a lot from other products and that it is really in use.

After the paper dried the children can use them to write or draw something on them. In that way they can also see how sturdy the paper is. Furthermore, we want to make clear that not only paper can be recycled but also other materials, e.g. bottles, etc.

All in all the children should have learned the value of resources and how important it is to recycle things. They also might take a more responsible look at waste.

4. References

Story:

Neustadt - eine Lesegeschichte, Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, 2009

(http://www.bmu.de/fileadmin/bmu-import/files/pdfs/allgemein/application/pdf/g_s_abfall_arbeitsblaetter_schueler.pdf)

Pyramid:

Abfallhierarchie vereinfacht, EU Abfallrichtlinie 2008/98/EG, 2008

(http://europa.eu/legislation_summaries/environment/waste_management/ev0010_de2008/98/EG.htm)

Pictures:

Changed pictures from the enclosed instructions of "Papierschöpfset"

5. Annex

Newtown

In Newtown everything is new every day. Every morning the people of Newtown wake up in their new beds, which they bought the day before. Every morning they have a new toothbrush and new soap. The new radio plays the newest music and the newest news. They take their nice wrapped butter and milk out of the new fridge. Even the tea is coming in new bags and the dishes are new. With the new bus the children, wearing nice new clothes and new cool school bags, are brought to school. On the sidewalks you can see big waste bins and overstuffed plastic bags containing everything that was used yesterday. Among the waste there is the radio and the only once used old bed.

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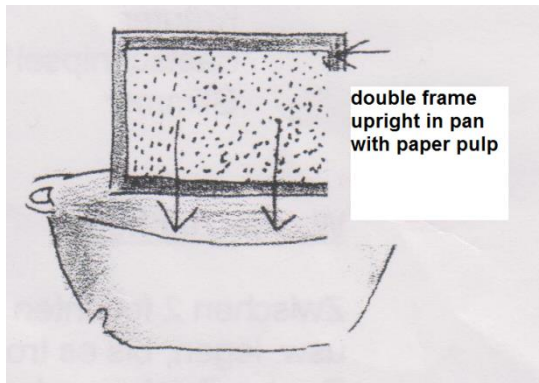
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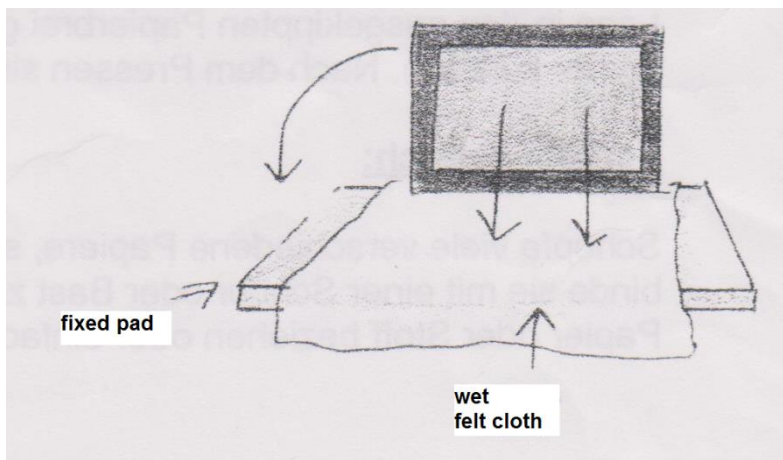
But the people of Newtown do not care for the warning. They enjoy having new things.

Illustrated guide:

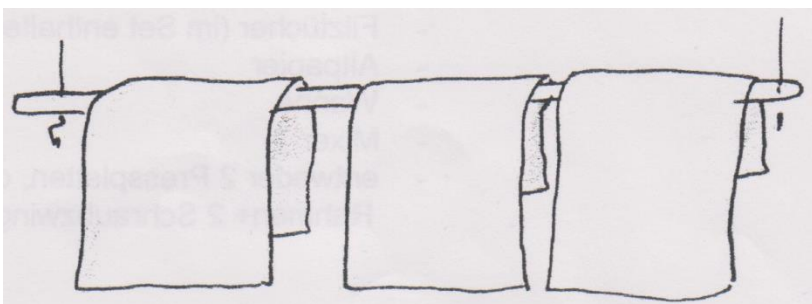
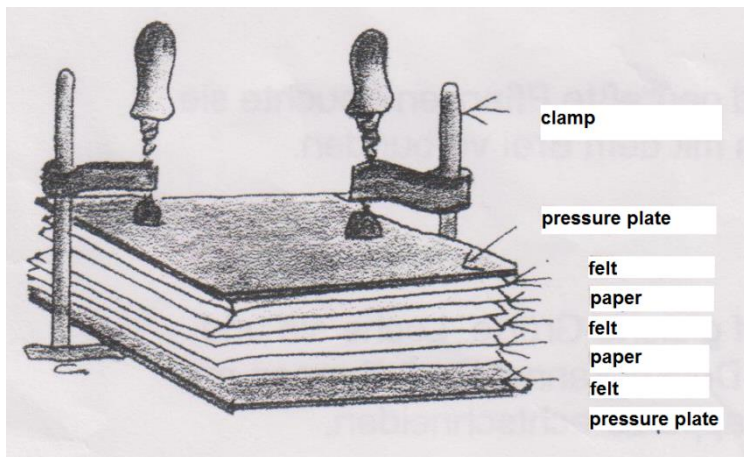
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